

Montana Aeronautics Commission



Volume 13—No. 4

May, 1962

MONTANA AIRPORT MANAGEMENT ASSOCIATION

On May 3rd, the MAMA will hold its 4th Annual Meeting. This year the meeting will be held from 9:00 A.M. to 5:00 P.M. at the Community Room in the Commerce Bank and Trust Company in Helena. A banquet will follow which will be held at the Montana Club at 6:30. The banquet speaker will be Clarence A. Anthony, Chairman of the Montana Aeronautics Commission. The meeting itself will be in the form of six panel discussions on a wide assortment of airport procedures and old airport problems. Panel members will discuss topics and then will entertain any questions or comments from the floor. The discussions will be on the following:

Airport loan and development program

Insurance needs for airports

Fire and rescue procedures

Other airport uses (such as drag racing, model airplanes, go carts, and air shows).

Airport leasing and master planning

Surplus equipment for airport uses

A business meeting will be held following the panel discussions.

All airport managers as well as airport board members and county commissioners are invited.

A \$5 registration fee per person will be charged. This fee will cover the cost of luncheon and the banquet.



**LEE MILLS, SUPERVISOR
OF HELENA GADO**

The Federal Aviation Agency Western Region headquarters at Los Angeles recently announced the appointment of Lee C. Mills as the supervisor of the General Aviation District Office located in Helena, Montana.

The promotion of Norman V. Hendy, Jr., during March 1961, required that Hendy move to Washington, D.C. Since that time Mills has been acting supervising inspector of the Helena district office.

In addition to Mills, the Helena staff consists of Operations Inspector William J. Cantwell and clerk-stenographer Mrs. Glen T. Childs. The other district office of Montana is located in Billings.

The FAA General Aviation District Office provides a service to the aviation public which consists of the original issuance of pilot and mechanic airman certificates,

aircraft airworthiness certificates; repair station, air taxi and flight school operator certificates, and the surveillance of certificate holders for continued competency. In addition the office investigates and reports aircraft accidents occurring within the district office boundaries. At the present time, located within the Helena district office boundaries, there are approximately 550 active aircraft, 36 fixed base operators serving the public, 21 operators who have air taxi certificates, 29 operators who are giving flight instruction, 8 of which operate FAA approved flying schools. There are 21 repair shops, 30 flying clubs and 9 Civil Air Patrol units, 1 mechanical school and 3 parachute jumping clubs. Also included are 15 authorized industry inspectors.

Mr. Mills, formerly a resident of Billings, Montana, resides at 708 N. Ewing with his wife and son, Stephen.

COMING AVIATION EVENTS

May 3—Montana Airport Managers Association 4th annual meeting, Helena.

May 18, 19, 20—Montana Pilots Association Convention, Cut Bank, Montana. For reservations, contact Mr. Art Stubkjaer, Glacier Hotel, Cut Bank.

June 2—Montana Pilots Fly-In to Culbertson's Diamond Jubilee, Free Barbecue, exhibits, rodeo and dance.

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of the
**MONTANA AERONAUTICS
COMMISSION**

Box 1698

Helena, Montana

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DIRECTORS COLUMN



AIRPORT DEVELOPMENT PROGRAM

In the Session Laws of 1945, Montana Aeronautics Commission was empowered and directed to encourage, foster and assist in the development of aeronautics in the State of Montana, and to encourage and establish airports and other air navigation facilities. It was further directed, during the 37th Legislative Assembly, to make loans and grants to various municipalities and counties in Montana for the promotion of aviation through the acquisition, development, and maintenance of airports and airport facilities.

The airport development program started on a very modest basis in 1957. By 1958, two such State sponsored airport development programs were completed.

The loan program was established for working with cities and counties furnishing both the necessary funds for construction programs and for use on a matching basis with funds provided by the Federal Airport Aid program. Under these joint co-operative programs, 6 airport projects were completed in 1959 and 6 additional projects completed in 1960.

As the program began to develop momentum and funds available were increased through greater aviation activity and the

earlier returns of loan repayment moneys, 15 completions were made in calendar 1961. Many of these airport development programs have been completed on a strictly county-state co-operative basis. However, the United States Forest Service, Indian Tribal Councils, Department of Justice, and Bureau of Public Roads had also worked jointly with the State Aeronautics Commission on a number of these developments. In the majority of the cases, the FAAs' Federal airport program had contributed substantially to this development. In addition to the 29 completed airports, up to the beginning of calendar year 1961, 22 additional airports had been programmed and construction under way to various stages across the State. By this time, the Montana Aeronautics Commission had, in the loan phase of the program alone, \$270,000. In addition to this funds for both loan and direct State developments were earmarked and encumbered in excess of \$400,000.

However, local communities had invested or earmarked in excess of 1 1/4 million dollars in construction and improvements. To date, more than 75,000 dollars has been returned on the repayment program by cities and towns to the State airport funds on the loan program.

As of this date in 1962, 26 airport development programs at city, county and State level, are programmed and are in actual development processes anywhere from preliminary engineering to the laying of asphalt surfaces. This accent on airport development for the State of Montana is a natural when the fact is considered that in August of 1958, Montana moved into the number 1 position in the nation for the ownership and operation of aircraft on a per capita basis. It has held this position ever since and lost the number 1 position nationally only on the entry of the State of Alaska to the Union. However, with the accent in Alaska being on bush type of commercial operations in the transportation of persons cargo and freight, Montana still ranks in the number 1 position for the private ownership of business use aircraft. It obviously follows that the ranking cities of our State on a per capita basis

therefore, hold this enviable position in the nation, thereby establishing the fact that this is Montana...the Big Sky Country.

MPA REPORT

This will be the last copy of the Newsletter to reach you before our annual convention at Cut Bank, so I want to get in a good plug for the Cut Bank Hangar; its President John Oien, Doctor Markette, convention committee chairman and all the other members who are working so hard there to show us all a top-notch Convention this year.

I was in Cut Bank a couple of weeks ago to see how things were progressing and believe me there is a lot of activity there. The fact that Doctor Markette is Past President of the Chamber of Commerce there, might have something to do with it but it sure seemed to me that everyone from Jarvis Halverson, the manager of the Elks Club, to Phyllis Sammons and Bill McNary are really whipping things into shape.

Don't forget the theme will be "hard times", the early birds will start on Friday night (May 18). The main activities will be the next day and the Convention will end with the pilots breakfast Sunday morning (May 20). For reservations write Mr. Art Stubkjaer in care of the Glacier Hotel.

See you in Cut Bank!

Yours for better flying, Mark Etchart, President.

MPA STATE CONVENTION

CUT BANK, MAY 18, 19, 20

Convention registration fee—
\$10.00 per person

Write for reservations to—Mr. Art Stubkjaer, Glacier Hotel, Cut Bank, Montana

Speaker—Mr. Joseph H. Tippets, Assistant Administrator FAA
Subject—"The FAA, Western Region, It's Mission, Function and Programs"

Traffic information—Contact Cut Bank radio, 114.4 megacycles
Schedule:

REGISTRATION—Friday or Saturday at Cut Bank airport terminal. Late arrivals register at Elks Club.

FRIDAY, 18 May—No-host cocktail party at Cut Bank Vet's Club

SATURDAY, 19 May:
8:30-11:30—Manufacturer's and

distributor's exhibits of 1962 aircraft and equipment at the airport.

12:00-2:00—Ladies luncheon at Vet's Club
1:00-1:30—Committee meetings
1:30-4:30—1962 Convention business meeting
6:30-7:30—Cocktail party—Elks Club
7:30-9:00—Banquet—Elks Club Speaker—Joseph H. Tippets
9:00?—"Hard Times" party—Elks Club

PASS THE INFORMATION ALONG

Lee C. Mills, General Aviation Inspector, GADO, Helena

All of us, at some time or another, have undergone an experience which we thought would benefit others if we could have passed the information on to them. By the same token, we all have had experiences which we thought could have been avoided if we had been forewarned. All our "hangar sessions" consist of this exchange of information.

The FAA has recently re-established a publication "General Aviation Inspection Aids" which is a catalog of all the "service difficulties" experienced by various mechanics, owners, pilots during their inspection or operation of an aircraft. These are listed and published, not with the intent to discredit a particular aircraft, but to inform the reader of a potential trouble area which may need inspection or attention. These listings name the aircraft by make and model, and then briefly describe the problem. In many instances, inspection of a similar make and model aircraft will reveal a like condition which, when corrected, may prevent later difficulties.

These General Aviation Inspection Aids are assembled from the malfunctioning and defects reports (Form FAA-1226) sent to the local FAA General Aviation District Office by the mechanics, pilots and owners in that area. The reports received are verified, then forwarded for coordination with the appropriate manufacturer. If the reports are numerous enough, or indicate a trend of a serious nature, they are published in the form of an Airworthiness Directive, another FAA publica-

tion which is available to the public free of charge. Pilots, owners, mechanics and fixed base operators are encouraged to obtain a free self-addressed package of Form FAA-1226 from their local General Aviation District Office for reporting service difficulties when they occur.

The results of the reporting procedure, General Aviation Inspection Aids, should be on the reading list of all aircraft owners, pilots, fixed base operators and mechanics to provide an additional guide during their aircraft inspections. This publication and 11 supplements are sold as a single subscription for \$1.25 and may be ordered from the U.S. Government Printing Office, Washington 25, D.C.

The FAA Airworthiness Directive cards are maintained by all active mechanics and Authorized Inspectors and may be reviewed by contacting the facility maintaining your aircraft or your local FAA General Aviation District Office.

TWO ENGINEERS JOIN MAC

To accomodate an expanding airport development program, the Montana Aeronautics Commission has employed two additional engineers, Vernon L. Moody and Eddie M. Granger.

A native of Great Falls, Moody attended grade school there and graduated from Simms High School.



VERNON L. MOODY

He served with the U.S. Marine Corps First Engineer Battalion from 1951 to 1954 and was attached to the First Marine Division during combat duty in Korea.

Vern received his Bachelor of Science degree from Montana

State College in 1958.

He was employed by the Montana Highway Department for three and one half years before joining the MAC.

He, his wife Roberta and three children, Cathy, Danny and Lorinda, live at 2209-5th Ave. in Helena.

Eddie Granger was raised on a ranch in the Milk River Valley of north-central Montana. He attended grade and high school at Harlem.



EDDIE M. GRANGER

Eddie served in the U.S. Air Force for four years and, upon being released in 1955, entered Montana State College from which he graduated in 1959 with a degree in civil engineering. After graduation he was employed by the Montana State Planning Board. He resigned in 1960 to attend officer Candidate school and Armor school with the U.S. Army. During his college years, Granger took flying lessons from Newby-Anderson Flying Service at Bozeman and qualified for his private license. Upon completion of OCS and Armored School, he took to the air again with the Army Aviation School at Fort Tucker, Alabama, from which he received his wings in 1961. He holds a commercial license with an instrument rating.

Ed, his wife Josie and two sons reside in Unionville.

May 31, 1919. The Navy's flying boat NC 4 arrives at Plymouth, England, completing the first American Transatlantic flight.

May 1-2, 1925. Endurance record without refueling of 28 hours, 35 minutes, 27 seconds, is established by U.S. Navy PN-9 boat.

EDUCATORS VISIT AIR FORCE ACADEMY

Mary Jo Janey, Aviation Education Supervisor

On April 11, 12 and 13 a group of Montanans interested in Aerospace Education were given a tour of the United States Air Academy at Colorado Springs, as well as a visit to NORAD Headquarters, as guests of Civil Air Patrol and the United States Air Force.

The trip there and back was by Convair outfitted for training navigators. At each seat was a true-air-speed Munro's indicator, a altimeter — gyrocompass. There was a and other special equipment which was not turned on for us but was interesting, nevertheless. We each had earphones listening in on air-ground communications. Time en route HLN to Colorado Springs was less than three hours. A complete academic curriculum, counseling, military and athletic briefing was given us by members of the Academy staff. We were also briefed on cadet selection and evaluation. Conclusions reached by most of us were that the Air Force is going to have some high-caliber officers in the future.

At NORAD we were shown the combat operations center, where all the information gathered by SAGE installations throughout the Continent is "on the board". It was impressive to see all the facilities for conducting the defenses of the Western Hemisphere, the elaborate communications systems, and control buttons and panels.

Those taking the trip were: Supervisors from the Department of Public Instruction: Mrs. Mary Jo Janey, James F. Watkins, Richard C. Mattson, Max Amberson, and Homer V. Loucks.

Dr. James E. Short, President, Western Montana College of Education, Dillon; D. Thomas Moriarty, Dean of Education, Eastern Montana College of Education, Billings; Dr. James Nickerson, Dean of Education, Montana State College, Bozeman; Dr. Wesley Caspers, Dean of Education, Western Montana College of Education, Dillon. Classroom teachers active in Aviation Education: Mrs. Laulette Hansen, Fort Benton; Orvis Stenson, Havre; Charles Kittock,

Wolf Point; and Norbert Johnson, Great Falls.

Pithy remarks by an observer after seeing and hearing AC-135 take-off at Lowry Air Force Base: "That's an Alcoa overcast."

ACCIDENT PREVENTION



Bernard A. Geier, FAA
Safety Agent, Billings

What is "P" Factor? "P" or Propeller Factor has been with us as long as we have been flying airplanes. We have blamed all the left turning tendencies during nose-high attitudes on engine torque without considering the action of the propeller. Engine torque, as such, is a reaction to the right hand rotation of the engine resulting in the tendency for the aircraft to ROLL to the left. This roll of the wings to the left causes a turn to the left so that engine torque only indirectly causes a left turn. The lift from the wings, after torque rolls the aircraft in to a left bank, causes the turn. This being the case, the roll can be corrected by the application of right aileron pressure. The left aileron would be deflected down creating drag on that wing with a resulting turn to the left unless sufficient right rudder pressure is held. So far, we can only see the need for rudder to correct for the drag of the down aileron.

Now let us get back to the "P" factor. Picture a rotating propeller on an engine and a man pushing a large block of butter directly into the propeller on a line parallel to crankshaft. In this case, each blade will take the same bite of the butter. In the level flight, the propeller biting through the air has the same pull with each blade. Now picture the man pushing the block of butter into the propeller from below on an angle

up. In this case, the blade moving down will take a larger bite than the up moving blade. This will be the blade on the right side of the engine, looking from the cockpit. During nose-high flight attitudes this will pull the nose of the aircraft to the left. In a climb, in slow flight, during any condition of flight with a nose-high attitude, right rudder must be held to correct for "P" factor. Improper correction for "P" factor would be to drop the right wing, causing a slip and a loss of performance. This slip condition causes a higher stall speed and a loss in rate of climb.

A helicopter has the same problem with the rotor blades. If both blades had the same degree of pitch, the advancing blade (the one on the right,—normal main rotor direction is to the left looking down from on top) would have more lift than the retreating blade. This, of course, is during forward motion when a relative wind from ahead is present. The helicopter would then roll to an inverted position. To prevent this, the rotor blades increase their degree of pitch as they pass forward position so that the retreating blade has the same lift as the advancing blade. In the case of the aircraft propeller, each blade has the same degree of pitch and, therefore, the "P" factor during conditions of nose-high attitudes. Prove this fact to yourself by keeping the wings level with the nose in a slow flight position and see the amount of right rudder needed to maintain coordinated flight conditions. Drop the right wing to correct for the turn and get off of the rudder and note the ball rolling to the right with a corresponding decrease in airspeed or vertical speed.

Next month V speeds will be discussed.

FEDERAL AVIATION AGENCY INSPECTION ITINERARY

AIRPORT	MAY	JUNE
Billings (Logan Field)	7-14-21-25	4-11-18-25
Culbertson	9	7
Gallatin Field (Belgrade)	15**-16*	13**-14*
Glasgow	8	20
Glendive	23	20
Great Falls Internat'l.	1**-2*	5**-6*
Helena City-County	7-14-21	4-11-18
Lewistown	29	27
Miles City	24	21
Missoula	28**-29*	25**-26*

* Written Tests Only

** Flight Tests Only



END "COCKPIT CLUTTER"

A new fitted leather flight case with a WAC/Sectional Chart file divider system that simplifies flight planning and checking for missing charts has been developed by Jeppesen and Company. Designed Model FC-6, this new case is designed specifically to meet VFR Flight needs.

In flight, required charts may be found quickly, and easily refiled after use. On arrival a pilot may have his case completely organized for the next flight "before the gas truck pulls up," according to the company. A single FC-6 case also provides enough storage for "A full set" of U. S. WAC charts, selected Sectional charts, Jeppesen Binders and "extras". Available in a choice of three leathers, the FC-6 Flight Case is only 10½" high, 9" wide, 17" long.

Interior surfaces of the case are plastic covered, to facilitate insertion and removal of contents. It also includes holders for pencils, plotter and computer, and features a single comfortable, compression-type handle.

Information on the new Jeppesen FC-6 Flight Case may be obtained at local airport dealers, or by writing to Jeppesen and Company, 8025 East 40th Avenue, Denver 8, Colorado.

Estimated 80% of the entire U.S. population—about 140 million persons of all ages—has never made an air trip. About 70% of the U.S. Adult population has never flown, 50% never taken a bus trip and 30% never taken a rail trip according to the Civil Aeronautics Board Handbook of Airline Statistics.

INSTRUCTOR'S LAMENT

The student is my pilot, him I shall not want,
He maketh me forced landings in rough pastures.
He leadeth me into trees and high tension wires.
He destroyeth my confidence.
He leadeth me into the path of oncoming traffic.
Yea, as I ride through air in the shadow of death, I fear
All evil for he is with me; his stick and rudder
Confuseth me, he prepareth stalls and loops in the presence of all planes in the air;
My temper runneth over. And I shall be grateful all my days on earth if you will spare my life and give this yo-yo a license.

NEW INTERNATIONAL AVIATION ORGANIZATION FORMED

Formation of a new international to represent general aviation owners and pilots was announced January 17 by J. B. Hartranft, Jr., president of the U.S. Aircraft Owners and Pilots Association and interim head of the formative world-wide group.

Known as the International Council of Aircraft Owner and Pilot Associations (ICAOPA), the new organization expects, among other things, to make it easier to fly from one country to another in private airplanes, thereby promoting greater international friendship, and to work with the United Nations-affiliated International Civil Aviation Organization in development of flight standards that will foster the growth of general aviation throughout the world.

The idea of an international confederation of general aviation, or non-airplane, associations has been under discussion between pilots from more than 50 nations during the past two years. As a result of interest expressed by many countries, the U.S. AOPA agreed to spearhead the formation of an autonomous international group, Hartranft said.

Senior vice president of ICAOPA is Douglas Wagner, president of the Canadian Owners and Pilots Association. Leslie H. Ford, president of the Aircraft Owners and Pilots Association of Australia is interim vice president

for the Pacific Region of the organization and Charles S. Logsdon has been named temporary secretary. Logsdon is well known in international aviation circles through previous work with authorities responsible for rules and regulations governing the establishment of international air records and the conduct of sporting aviation competitions.

It is anticipated that ICAOPA will represent at least 15 national flying groups with a joint membership of more than 250,000 in the near future, Hartranft revealed. Associations that have already signed the organizational charter are the Australian and U.S. Aircraft Owners and Pilots Associations, and the Canadian Owners and Pilots Association. Signatures by the South African Aircraft Owners and Pilots Association and the Philippine Airmen's Organization appear to be imminent, he added.

One of the basic aims of the new organization, Hartranft said, will be to provide general aviation with a stronger voice in the formulation of international flight standards.

FOR SALE

1. D1700 Kohler motor-generator 32V D.C.
2. D1700 Kohler motor-generator 32V D.C.
3. Switch board with type MU30-TRK time clock 32V-30 Amp. D.C.
4. 6 ea. rolls wire, two wire, multiple strand #12 copper.
5. 6 2ea. chests with approach lights (AAF B-2 portable field set).
- 20 ea. lights (runway AAF B-2).
- 25 ea. cones (runway AAF-2).
- 20 ea. bulbs for runway lights.

Bids to be submitted on any or all items. Mail bids to the County Clerk and Recorder, Carbon County Joint Airport Board, Red Lodge, Montana. Bids to be opened May 28, 1962. Equipment may be inspected at the City Shops, Red Lodge, Montana.

FOR SALE: 90 hp Aeronca Champ with spray outfit. Priced right. Ben D. Shennum, Scoibey, Montana.

May 20-21, 1927. Charles A. Lindberg makes the first nonstop flight from New York to Paris, 3,610 miles in 33 hours, 30 minutes, thereby winning the Orteig Prize of \$25,000.

May 25, 1927. Lt. James H. Doolittle does an "outside loop" in an airplane; first time this feat has ever been accomplished.

FAA TO BROADCAST SIMULTANEOUS CODE AND VOICE OVER GROUND FACILITIES

Pilots across the country will soon receive simultaneous code identification and voice broadcasts from air navigation facilities under a new Federal Aviation Agency program.

The 760 VORs (very high frequency omnidirectional radio ranges), VORTACs and Terminal VORs, which form the basis of the airways system are being modified to permit simultaneous transmission of code and voice on the same frequency. The relative levels of the simultaneous broadcasts will be arranged to make both easily "read" by pilots. Presently, code identification of facilities is automatically suspended during voice broadcasts from the ground stations.

The need for a switch to simultaneous broadcasts developed primarily from the ever increasing speed of aircraft, capable of flying great distances without navigation facility identification during the period when code signals were suspended for voice broadcasts. The voice broadcasts are made 15 minutes after and 15 minutes before the hour, consisting of weather reports three or four minutes long.

Feasibility of the simultaneous code/voice broadcasts was demonstrated by favorable reaction to a nationwide test in which 20 VORs were operated with simultaneous transmission of both sources of identification. The 20 VORs used in the test have remained on the air. A minor modification program will put the new plan into effect at all of the remaining 740 ground stations. All future VORs, TVORs and VORTACs will provide for the simultaneous broadcasts.

The simultaneous code and voice broadcast feature was recommended early this year by the Seventh Session of the International Civil Aviation Organization's Communications Division in Montreal.

May 15, 1918. Regular air mail service between Washington D.C. and New York City inaugurated; operated by the Army.

GO AROUND IF YOU INTEND TO USE THE RUNWAY BEHIND YOU

Accidents which are caused from overshooting runways, especially short ones, are becoming an ever-increasing problem. Accidents of this nature normally occur without injuries to the pilot or passengers, but usually resulting in extensive damage to the aircraft. It is also very injurious to the pride of the pilot who is the victim of this unnecessary incident.

Several possible reasons for an increase in this type of accident follow. One consideration would be that the aircraft today are faster and cleaner which require more accurate approach speed control. This may be due to the good brakes and tricycle gear; that is, the pilot is tempted to place too much reliance on the stopping capabilities of the aircraft. One other reason which may apply to over-shooting is the laxity of the pilot in maintaining reasonably slow, but safe approach speed—as recommended by the manufacturers. Another cause may be the lack of systematic practice of the pilot to maintain proficiency and judgment. Last, but not least, just the failure to go around when the pilot knows that he can't possibly make a safe landing. It is our contention that if a pilot has acquired adequate judgment at the time of solo to know when he should go around on overshooting, he certainly should know it even better with more experience. One sure motto that will always work is "When in doubt, go around." This eliminates the element of doubt and has always proven to be the only sure cure. Even though it is very easy to find many reasons to justify overshooting, by no means should they be used as excuses.

There has been no good logical excuse advanced to cover up for poor judgment. In all cases of overshooting, the pilot will, if he tells the truth, admit that there was a certain amount of doubt in his mind as to the outcome of the approach to the landing.

One of the most predominant cases of this overshooting malady is the false pride element, which causes the pilot to act against his better judgment. Rather than let

his friends who are with him or on the ground think that he is a poor pilot, he will take unnecessary risks even to the extent of cracking-up the airplane.

Many known cases have been recorded where the pilot was under extreme pressure from weather, low fuel supply, nervous passengers or many other reasons which may cause him to inadvertently overshoot his landing in his anxiety to get on the ground. There are also many cases of attempted landings on inadequate landing strips such as private landing strips or farm fields that are too short for all practical purposes.

In conclusion, some helpful reminders are: take some dual instruction occasionally; practice more landings; consult the "Operator's Manual" for your plane; be sure the landing area is adequate; never get in a hurry; don't be influenced by what others will think; let your conscience be your guide, and always go around when in doubt.

WANTED: Crop spraying job for this season. 14 years spraying experience. Will also accept commercial flying of any kind and holds an A&E. Contact: Glenn L. Stott, 1215 10th Ave. S.W., Great Falls, Phone 453-8343.

FOR SALE: 1947 Stinson Voyager model 108-2. TT1754, 763 hours SMOH. LF receiver, VHF transmitter. Fabric excellent, brown and cream color. Licensed through September 1962. \$2,650.00. Contact Leonard Sturart, Havre, Montana. Phone 265-9068.

FOR SALE: Airport Beacon Tower, light, Synchronous motor, timer. \$55.00. Pete Albinola, 911 W. Teddy Ave., Kellogg, Idaho. F.O.B. Kellogg, Idaho.

FOR SALE: WIND SOCKS. 24" standard \$8.00, 36" Commercial type \$16.00. Send order and payment to Montana Aeronautics Commission, Box 1698, Helena, Montana.

FOR SALE: 1947 Stinson Voyager 150, small tail, outside baggage, good fabric. Approx. 400 H.S.M.O. 100 since top. Recent metal prop, new heavy duty battery. V.H.F. transmitter, LF. receiver, outside air temp. Rotating beacon, flashing navigation lites, recent seat belts, 8 day clock, sensitive altimeter, Turn & bank, Cyl. head temp., manifold pressure gauge 3rd, notch flaps, large spinner, wheel speed fairings. A nice clean Stinson, inside and out, priced to sell. Call or write John R. Stevens, Twin Bridges, Montana, Phone 684-5666.

FOR SALE: Piper 1948 P.A.-15 with 65 HP Lycoming 670 hours total time engine and airframes. Original fabric in very good condition. Always hangared. 5 gal. aux. tank. Extra prop. New tires. Relicensed at time sale, \$1400. Unlicensed, \$1350. See or write: Edgar Richardson, Scobey, Montana.



NOTES OF JIM MONGER



CHIEF AIRPORT ENGINEER

ROUNDUP. The City-County board has made application to this office for a loan to aid in the financing of an airport redevelopment project. This project will consist of Runway Sealcoating, taxiway re-surfacing, and ramp reconstruction on the Roundup airport.

BIG SANDY. The Chouteau County Airport Board is planning on the installation of a beacon and runway lighting system for the Big Sandy Airport. The project will be financed by the local airport board with the Montana Aeronautics Commission furnishing the beacon.

POPLAR. The city of Poplar and county of Roosevelt have made application for a MAC/FAA local airport re-construction project. This project will consist of paving a 3,000' runway, paving a taxiway, and apron. Total cost is estimated at \$44,852.00.

ROOSVILLE. A border crossing airport will be constructed on the Canadian Border north of Eureka. Here, the private pilot will be able to check his aircraft through U.S. and Canadian Customs. This will be the only Montana Port of Entry west of the Continental Divide. The MAC is sponsoring this project with a great deal of assistance from pilots in the Flathead Valley. Preliminary Engineering is now under way and construction is expected to be completed this year.

LINCOLN. The Montana Aeronautics Commission is sponsoring a recreational airport near

Lincoln, Montana. This project is to be completed late this summer. This is a MAC/FAA project and cost is estimated at \$48,000. The airport will consist of a stabilized turf runway 4,000'x75', and will have a stub taxiway and apron. Engineering is now underway on this job.

DEER LODGE. Construction is well underway on the airport at Deer Lodge. This reconstruction project consists of a new paved NW/SE, 3,800'x75' runway with taxiway and apron. This local-state-federal project will cost approximately \$61,800.00.

MEMBER OF MAC STAFF QUALIFIES IN ROTARY WING

Captain R. J. (Dick) Munroe, USAR, qualified, April 13 at Camp Wolters Texas, as an Army Rotary Wing Aviator. Munroe, Safety and Education Officer for the Montana Aeronautics Commission, and an Army reserve officer, was called to active duty in January and spent ten weeks at Officer Rotary Wing Qualification School receiving instruction in flying helicopters.

Dick started flying in 1943 as a tail gunner on a B-17. He flew 27 missions over enemy occupied Europe.

After being discharged from the Army in 1945, he entered Colorado State University from which he received a degree in Psychology with a major in biology in 1949.



DICK MUNROE

While attending college he took advanced ROTC and received a commission in the Air Force as a maintenance engineering sup-

ply officer.

The Air Force, being reluctant to allow a supply officer to go to flight school, lost his services when he passed the Navy's exams for a USN direct-procurement commission. Munroe entered the Navy's "Annapolis of the Air" at Pensacola in 1949. He received his Naval Aviator Wings in 1951 as a fighter pilot.

After Heavier-than-Air training, he was one of fifty regular Navy officers selected to attend Lighter-than-Air training at Lakehurst, New Jersey, where he qualified as an airship first pilot.

After service at sea aboard the carriers Saipan, Bataan, and Monterey and several more Navy schools, Munroe asked to be reverted to reserve status and was released to inactive duty in 1952.

Upon release from the Navy, he returned to Colorado and worked on a Masters degree in Education and with the Colorado Game and Fish Department. He continued his flying both in a civilian capacity with the Game Department and with the Navy's "Weekend Warriors" as a jet fighter pilot.

In 1956 Munroe returned to his native State as Information and Education Officer and pilot with the Montana Fish and Game Department.

In 1959, after the Navy closed its Naval Air Facility at Spokane, he transferred his Commission to the U.S. Army Reserve and subsequently was attached to the Montana Army Guard 163rd Armored Cavalry for flight proficiency.

Dick was employed by the MAC in January of 1961.

ONE MAN'S OPINION OF A HELICOPTER

The helicopter is an amazing assortment of nuts, bolts, rotors, pushpull rods, irreversibles, longitudinal collective differential quadrants, swash plates, wobble plates, gimbal rings, cuff and trunion assemblies, and other gadgets too numerous to mention here. All of these are welded, riveted, bolted, or sewed (sometimes wired) together to make a single machine capable of flight. In fact, it is capable of flight in any direction, backward, forwards, sideways, up, down, and even standing still. Standing still is known

as hovering. This comes in handy for those who like to fly but have no place to go.

One of the more necessary components is the engine. This unit is expected to start with ordinary fuel, change it to BTU, the BTU to BMEP, the BMEP to RPM. The RPM is then transmitted thru a series of shafts and gears to the main rotor blades which are responsible for the frantic egg beater motion.

The engine has several important parts. Among these are the cylinders. A cylinder is a long hole covered on one end with a plate full of holes containing valves. The holes admit air, fuel, and sometimes water and carelessly misplaced tools. The other end is closed with a plug called a piston. This is free to move up and down and would come out altogether if it were not fastened to a connecting rod. The connecting rod, too, is important because it is responsible for converting your BMEP to RPM. Without it you would be left with BMEP, which no one knows how to use up to now.

The engine power is measured in horsepower. Why? Who knows. It's often difficult to get a self-respecting horse in close proximity with one of these machines. It is better to rely on instruments the electrical men have invented. They indicate power in amps, volts, or kilowatts, depending on the individual whims of the designer. With a little imagination these values can be converted to horsepower.

Starting the "thing" requires some knowledge, steady nerves, and a certain amount of bravery. First make a careful check of all your instruments—both of them. This gives you a little self-confidence and adds prestige in the eyes of the on-lookers.

After everything has been checked, it is safe to start the engine. If everything is as it should be, there will be a considerable noise and you will start to shake and tremble. That means the engine has started. When your audience has returned, synchronize your eyeballs and look wisely at the instrument panel, noting pressure, RPM, and before you forget it, check the flight controls. This is important even though they quite often do not perform the

function for which designed. It is very embarrassing to get in the air and find these items not working properly, or just not working, period. Once airborne you are on your own, you will have willfully and knowingly placed yourself in the most horrible of all predicaments. **May the good Lord have mercy on your soul. You have earned it!!**

—ANONYMOUS



Congratulations!! Certificates Issued Recently To Montana Pilots

Thurston, Donn Abbott, Columbia Falls, Private
McKnight, William S., Butte, Student
Ewing, Robert E., Kalispell, Student
Mattson, Ronald B., Manhattan, Private
McChesney, Albert E., Bozeman, Private
Cole, Earl M., Bozeman, Private
Erickson, Alan W., Libby, Private
Kolstad, Leo S., Bozeman, Student
Amport, Ernest H., Great Falls, Com. AMEL, Boeing 377, Instrument
Osburn, Donald Ivan, Great Falls, Student
Baze, Charles B., Missoula, Student
Hinman, Harold G., Choteau, Student
Samsel, William Kent Jr., Missoula, Student
Bond, Raymond D., Great Falls, Student
Coan, Eugene C., Great Falls, Student
Kolstad, Leo S., Bozeman, Private
Crow, John A., Absarokee, Private
Nelson, William L., Dutton, Student
Lunden, Edwin Dolliver, Chinook, Student
McMickin, Johnny R., Great Falls, Student
Rogers, Bruce L., Billings, Student
Burke, Patricia Ann, Anaconda, Student
Ruppel, Robert D., Bozeman, Student
Weibert, Donald L., Garryowen, Student
Wishman, Roy, Geraldine, Student
Carr, Harold J., Great Falls, Commercial
Warkins, Lyman C., Kalispell, Commercial
Hoffman, Dean C., Missoula, Private
Davis, Peter M., Great Falls, Commercial
Snider, Rodney D., Missoula, Flight Instructor-Helicopter added to flt. instr, airplanes & Instrument
King, Hugh G., Missoula, Helicopter added to Private
Bailey, Herbert E., Helena, Student
Saxman, John B., Jr., Bozeman, Student
Pauli, Floyd A., Rexford, Student
Stone, Michael J., Livingston, Student
Taylor, Leo C., Des Plaines, Ill. (Missoula) Student
Shepherd, Warren R., Plummer, Ida. (Missoula) Helicopter on Private
Rise, Alfred A., Dutton, Instrument
Sorenson, Arnold, Kremlin, Commercial
Vande Sandt, Lloyd A., Gildford, Private
Koessler, Barbara S., Missoula, Student
Caspers, Wesley, Dillon, Student
Strandberg, Hardie N., Helena, Private
Wishman, Verne, Geraldine, Student
Read, Stanley G., Missoula, Student
Enst, Richard G., Havre, Student
Paisley, Melvyn R., Great Falls, Commercial
Danreuther, Charles E., Loma, Private
Williamson, Dennis Brad, Great Falls, Private
McKay, David J., Great Falls, Student
Smith, Martin W., Great Falls, Helicopter added to Com. ASSEL
Duffy, Murray Lee, Lewistown, Helicopter added to Com. ASSEL
Hope, David Wallace, Commercial
Clark, Edwin O., Billings, Commercial
Hurry, James Joseph, Billings, Commercial
Carlstrom, LeRoy Edward Jr., Roundup, Student

Haskell, Willis Batchelor, Lewistown, Private
Gates, Charles N., Billings, Private
Hamilton, Noble James, Hilger, Student
Stroh, James Phillip, Laurel, Student
Wickens, Thomas William, Suffolk, Private
Bouras, Norman Doyle, Glasgow, Student
Wilson, Ray, Lewistown, Student
Lang, Harold Allen, Lewistown, Private
Bawden, Norman Elroy, Lewistown, Private
Heggin, Ronald Arthur, Winifred, Student
LeDuc, Gorvan J., Laurel, Student
Boyce, James Merle, Winifred, Student
O'Brien, Turman Ellis, Miles City, Student
Danner, William Bruce, Sidney, Private
Baltrusch, William Herbert, Havre, Private
Baltrusch, Otto, Havre, Private
Shore, Erle Michael, Billings, Student
Sorely, John Charles, Wolf Point, Student
Eggum, Jack Melvin, Glendive, Student
Garberg, Raymond Arthur, Flaxville, Student
Reynolds, Pat Carl, Glendive, Student
Strissel, Gaylord, Billings, Student
Strissel, Boyd Lester, Billings, Student
Schieffer, Duane William, Billings, Student
Quale, Arnold Eugene, Plentywood, Student
Holte, Gordon Gerald, Plentywood, Private
Petersen, Oscar Thorkild, Andes, Commercial
Breden, Thomas Allen, Scobey, Ltd. Flight Instr.
Bengochea, Mitchell, Nashua, Private
Hoyle, Lyle Duane, Redstone, Private

May 19, 1908. Lt. T. E. Selfridge, first U.S. military man to fly a "heavier-than-air" machine, pilots the Aerial Experiment Association's second experimental biplane, the "White Wing".

DAYTIME WEATHER AT MONIDA

The Weather Bureau has established a daytime aviation weather reporting station at Monida, Montana, on the crest of the Continental Divide boundary between Idaho and Montana. This is on the main north-south air route from almost all of Western Montana to points to the south. This route is heavily traveled. The station will take hourly observations an average of 12 hours a day—perhaps 9 or 10 during mid-winter to 14 or 15 midsummer, and started reporting April 11, 1962, before reports from the Dubois FSS station were ended. The reports, during hours they are to be available, will be relayed to Service A teletype circuits and will be available generally at all regional stations that have teletype drops. The change is part of the overall plan of the FAA to remote Dubois, Idaho, FAA radio facilities to Idaho Falls, effective within the next week or two—but the FAA will announce the change later.

FLYERS INVITED TO CULBERTSON

The people of Culbertson have invited Montana flyers, their families and friends to attend their Diamond Jubilee, June 2nd. The colorful northeast Montana community has set aside the second day of their three day celebration for a Fly-In of State pilots.

The program will include a free barbecue; a rodeo; antique displays; Air Force show; old car, horse, and chariot races; and Indian dances, exhibits and village.

Arnold Fredrikson, of Modern Aire Flight Service, has informed us that Culbertson Unicorn 122.8 will be in operation all day, transportation to town will be available and 80 and 100 octane fuel is available. Plenty of space, but a limited number of tie downs are available. Arnold asks that pilots bring their own tie downs.

Flight Plans are a nuisance only to the pilots who should have filed them.

May 22, 1906. Patent number 821,393 issued to Wright Brothers on a Flying Machine.

EXAM-O-GRAM NO. 11 DENSITY ALTITUDE AND ITS EFFECT ON AIRCRAFT PERFORMANCE

A report of a recent accident was stated in the following words: "Take-off was attempted on a 1,600-foot strip; the airplane cleared the fences but sank back and struck a ditch." The pilot states that he failed to consider the effect of the grassy, rough field, the 90° temperature, heavy load of fuel and passengers, and the calm wind.

This EXAM-O-GRAM discusses the effect that high temperature and other factors had on this take-off.

1. WHAT IS DENSITY ALTITUDE? It is a measure of air density. Under non-standard conditions, density altitude will differ from the elevation. As the air density decreases (i.e., air becomes thinner), density altitude increases, and vice versa. Low atmospheric pressure, high temperature, and high humidity all result in a decrease in air density and an increase in density altitude. (Contrary to prevailing opinion, moist air is less dense than dry air. Water vapor actually weighs less than dry air—approximately 5/8 as much.)

2. WHAT EFFECT DOES AN INCREASE IN DENSITY ALTITUDE HAVE ON AIRCRAFT PERFORMANCE?

A. Engine horsepower decreases (unless it is a supercharged engine).

B. The propeller loses some of its efficiency as it will not take as much of a bite out of the thinner air.

C. Take-off distance is increased and rate of climb is decreased because of the loss of engine power and propeller efficiency, and the higher true airspeed necessary to obtain the required lift in the thinner air. (In other words, if the density altitude is 8,000 feet at an elevation of 5,000 feet, the aircraft flies as though it were at 8,000 feet.)

3. UNDER WHAT CONDITIONS IS A HIGH "DENSITY ALTITUDE" MOST HAZARDOUS?

When it is present with other factors that tend to increase the take-off distance or require that

this distance be limited such as: heavy load; calm wind conditions; short runway; obstructions at or near the end of the runway; and unfavorable runway conditions (rough, tall grass, soft, snow, upgrade, etc.).

4. HOW MUCH CAN THE DENSITY ALTITUDE VARY AT A GIVEN AIRPORT DURING SEASONAL EXTREMES?

This depends on the extremes in temperature variation. From a density altitude chart, it can be determined that, at an elevation of 5,000 feet, temperature -6° F, the density altitude would be approximately 2,200 feet; at a temperature of 104° F, the density altitude would be approximately 8,900 feet. These figures do not include the increase due to a high relative humidity on the 104° day. **Do not let the performance of your airplane on a cold winter day lull you into a sense of security when taking off on a hot, humid summer day.**

5. If an airplane requires a distance of 1,200 feet for take-off at sea level (to clear a 50-foot obstacle) under standard conditions, what distance is required at (a) an elevation of 5,000 feet, temperature -6° F; (b) an elevation of 5,000 feet, temperature 104° F? Refer to the Koch Chart. (Assume that pressure altitude and elevation are equal.)

Problem A

The line joining 5,000 feet and -6° shows an increase in take-off distance of 20%.

Increase in

T.O. Distance— $20 \times 1,200' = 240'$

Total T.O. Distance—1,200' plus 240'—1,440'

Problem B

The line joining 5,000 feet and 104° shows an increase in take-off distance of 190%.

Increase in

T.O. distance— $1.9 \times 1,200' = 2,280'$

Total T.O. Distance—1,200' plus 2,280'—3,480'

Difference in Takeoff Distance
—3,480'—1,440' equals 2,040'

Under the above conditions presented in item 5, Problems A and B, it can be seen that the takeoff distance on the hot summer day increased more than 2,000 feet over that required on the cold winter day at the same airport.

BEWARE OF HIGH, HOT, AND HUMID CONDITIONS.

FOR SALE: Maroon Stinson Station Wagon, 165 H.P., 1949 Model, total time aircraft and engine 665 hrs., LF, HF, VHF omni instruments, new tires, fabric second green, good and clean, \$4,250.00. Contact Fred Naegele, Box 617, Helena, Montana.

May 25, 1910. Orville and Wilbur Wright make a short hop at Huffman Field, Dayton, Ohio—the only time the Wright Brothers were ever in the air together.

MEMBER NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

PURPOSE:—“To foster aviation as an industry, as a mode of transportation for persons and property and as an arm of the national defense; to join with the Federal Government and other groups in research, development, and advancement of aviation; to develop uniform aviation laws and regulations; and to otherwise encourage co-operation and mutual aid among the several states.”



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